AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims.

1. (Currently Amended) A method for monitoring stability of a carrier frequency (ω_i) of identical transmitted signals ($s_i(t)$) of several transmitters ($S_1,\ldots,S_i,\ldots,S_n$) of a single-frequency network comprising:

receiving, by a receiver device (E) positioned within the transmission range of the single-frequency network, a signal ($e_i(t)$) associated with a transmitted signal ($s_i(t)$) of a transmitter (S_i) and a reference signal ($e_0(t)$) of a reference transmitter (S_0); ~~and~~

evaluating a phase position of the received signal ($e_i(t)$) associated with the transmitted signal ($s_i(t)$) of the transmitter (S_i) with reference to the received signal ($e_0(t)$) of the reference transmitter (S_0); and

calculating a carrier-frequency displacement ($\Delta\omega_i$) of a carrier frequency (ω_i) of a transmitter (S_i) relative to a reference carrier frequency (ω_0) of the reference transmitter (S_0) from a phase-displacement difference ($\Delta\Delta\Theta_i(t_{B2}-t_{B1})$) caused by the carrier-frequency displacement ($\Delta\omega_i$) of this transmitter between a phase displacement ($\Delta\Theta_i(t_{B2})$) at least at one second observation time (t_{B2}) and a phase displacement ($\Delta\Theta_i(t_{B1})$) at a first observation time (t_{B1}) of a received signal ($e_i(t)$) of this transmitter (S_i) associated with the transmitted signal ($s_i(t)$) relative to a received signal ($e_0(t)$) of the reference transmitter (S_0) associated with the transmitted signal ($s_0(t)$).

2. (Canceled)

3. (Previously Presented) A method for monitoring the stability of the carrier frequency according to claim 2, wherein said calculating includes:

determining a transmission function ($H_{SFN}(f)$) of the transmission channel from the transmitters ($S_1,\ldots,S_i,\ldots,S_n$) to the receiver device (E),

calculating a characteristic of a complex, time-discrete, summated impulse response ($h_{SFN1}(t)$) at the first observation time (t_{B1}) and a characteristic of a complex, time-discrete, summated impulse response ($h_{SFN2}(t)$) at the second observation time (t_{B2}) of the transmission channel respectively from the transmission function ($H_{SFN}(f)$) of the transmission channel,

masking a characteristic of a complex impulse response ($h_{SFN1i}(t)$) at the first observation time (t_{B1}) and of a characteristic of a complex impulse response ($h_{SFN2i}(t)$) at the second observation time (t_{B2}) for every transmitter (S_i) of the single-frequency network respectively from the characteristic of the complex, summated impulse response ($h_{SFN1}(t)$) at the first observation time (t_{B1}) and from the characteristic of the complex, summated impulse response ($h_{SFN2}(t)$) at the second observation time (t_{B2}),

determining a phase characteristic ($\arg(h_{SFN1i}(t))$) of the complex impulse response ($h_{SFN1i}(t)$) at the first observation time (t_{B1}) and of a phase characteristic ($\arg(h_{SFN2i}(t)$) of the complex impulse response ($h_{SFN2}(t)$) at the second observation time (t_{B2}) for every transmitter (S_i) of the single-frequency network, and

calculating the phase-displacement difference ($\Delta\Delta\Theta_i(t_{B2}-t_{B1})$) between a phase displacement ($\Delta\Theta_i(t_{B2})$) at the second observation time (t_{B2}) and a phase displacement ($\Delta\Theta_i(t_{B1})$) at the first observation time (t_{B1}) by subtraction of a phase characteristic ($\arg(h_{SFN1i}(t))$) of the complex impulse response ($\arg(h_{SFN1i}(t)$) at the first observation time (t_{B1}) from a phase

characteristic $(\arg(h_{SFN2i}(t)))$ of the complex impulse response $(h_{SFN1i}(t))$ at the second observation time (t_{B2}) of the respective transmitter (S_i).

4. (Previously Presented) A method for monitoring the stability of the carrier frequency according to claim 3, further comprising:

increasing the phase-displacement difference $(\Delta\Delta\Theta_i(t_{B2}-t_{B1}))$ by the factor $2*\pi$ in the case of a decrease in the phase-displacement difference $(\Delta\Delta\Theta_i(t_{B2}-t_{B1}))$ to the value $-\pi$ or below and

reducing the phase-displacement difference $(\Delta\Delta\Theta_i(t_{B2}-t_{B1}))$ by the factor $-2*\pi$ in the case of an increase in the phase-displacement difference $(\Delta\Delta\Theta_i(t_{B2}-t_{B1}))$ above the value π.

5. (Previously Presented) A method for monitoring the stability of the carrier frequency according to claim 3, further comprising:

determining, in the case of digital terrestrial TV, the transmission function of the transmission channel from the transmitters $(S_1,\ldots,S_i,\ldots,S_n)$ to the receiver device (E) from the DVB-T symbols of scattered pilot carriers of received signals $(e_i(t))$ of the transmitters $(S_1,\ldots,S_i,\ldots,S_n)$ modulated according to the orthogonal-frequency-division-multiplexing (OFDM) method.

6. (Previously Presented) A method for monitoring the stability of the carrier frequency according to claim 3, wherein:

said calculating the characteristic of a complex, time-discrete, summated impulse response $h_{SFN1/2}(t)$ at the discrete first observation time t_{B1} of the transmission channel is derived

from the transmission function $H_{SFN}(f)$ of the transmission channel using the Fourier transform according to the formula:

$$h_{SFN1/2}(t) = \sum_{k=0}^{N_F-1} H_{SFN}(k) * e^{j2\pi kt/N_F}$$

wherein

$H_{SFN}(f)$ denotes the transmission function or respectively the frequency response of the transmission channel,

N_F denotes the number of sampling values for the discrete Fourier transform,

k denotes the discrete frequency values,

t denotes the sampling times of the time-discrete, summated impulse response of the transmission channel and

1/2 denotes the index for the observation time t_{B1} or respectively t_{B2}.

7. (Previously Presented) A method for monitoring the stability of the carrier frequency according to claim 6, wherein:

said calculating the phase-displacement difference ($\Delta\Delta\Theta_i(t_{B2}-t_{B1})$) for each transmitter S_i of the single-frequency network is derived according to the formula:

$$\Delta\Delta\Theta_i(t_{B2}-t_{B1}) = \arg(h_{SFN2i}(t)) - \arg(h_{SFN1i}(t))$$

wherein

i denotes the index for the transmitter S_i

$\arg(h_{SFN2i}(t))$ denotes the phase characteristic of the complex impulse response $h_{SFN2i}(t)$ at the observation time t_{B2} of the transmitter S_i and

$\arg(h_{SFN1i}(t))$ denotes the phase characteristic of the complex impulse response $h_{SFN1i}(t)$ at the observation time t_{B1} of the transmitter S_i.

8. (Previously Presented) A method for monitoring the stability of the carrier frequency according to claim 7, wherein:

said calculating the carrier-frequency displacement $\Delta\omega_i$ of the transmitter S_i relative to the carrier frequency ω_0 of the reference transmitter of the single-frequency network is derived according to the formula:

$\Delta\omega_I = \Delta\Delta\Theta_i(t_{B2}\text{-}t_{B1})/(t_{B2}\text{-}t_{B1})$

wherein

i denotes the index for the transmitter S_i,

$\Delta\Delta\Theta_i(t_{B2}\text{-}t_{B1})$ denotes the phase position difference $\Delta\Delta\Theta_i(t_{B2}\text{-}t_{B1})$ for the transmitter S_i of the single-frequency network and

t_{B1}, t_{B2} denote the observation times.

9. (Previously Presented) A method for monitoring the stability of the carrier frequency according to claim 8, further comprising performing the following steps repeatedly:

calculating the characteristic of the complex, time-discrete, summated impulse response $h_{SFNj}(t)$ and $(h_{SFN(j+1)}(t)$ at the observation times t_{Bj} and $t_{B(j+1)}$,

masking the characteristic of the complex impulse response $h_{SFNji}(t)$ and $h_{SFN(j+1)i}(t)$ at the observation times t_{Bj} and $t_{B(j+1)}$ for every transmitter S_i of the single-frequency network,

determining the phase characteristics $\arg(h_{SFNji}(t)$ and $\arg(h_{SFN(j+1)i}(t))$ of the complex impulse responses $h_{SFNji}(t)$ and $h_{SFN(j+1)i}(t))$ at the observation times t_{Bj} and $t_{B(j+1)}$,

calculating the phase-displacement difference $(\Delta\Delta\Theta_i(t_{B(j+1)}-t_{Bj}))$ between the phase displacement $\Delta\Theta_i(t_{B(j+1)})$ at the observation time $t_{B(j+1)}$ and the phase displacement $\Delta\Theta_i(t_{Bj})$ at the observation time t_{Bj} for every transmitter S_i of the single-frequency network,

increasing the phase-displacement difference $\Delta\Delta\Theta_i(t_{B(j+1)}-t_{Bj})$ by the factor $2*\pi$ in the case of a decrease in the phase-displacement difference $(\Delta\Delta\Theta_i(t_{B(j+1)}-t_{Bj}))$ to the value $-\pi$ or below,

reducing the phase-displacement difference $(\Delta\Delta\Theta_i(t_{B(j+1)}-t_{Bj}))$ by the factor $-2*\pi$ in the case of an increase in the phase-displacement difference $\Delta\Delta\Theta_i(t_{B(j+1)}-t_{Bj})$ above the value π and

calculating the carrier-frequency displacement $\Delta\omega_{ij}$ of the transmitter S_i relative to the carrier frequency ω_0 of the reference transmitter of the single-frequency network at several observation times t_{Bj}; and

averaging all carrier-frequency displacements $\Delta\omega_{ij}$ of every transmitter S_i relative to the carrier frequency ω_0 of the reference transmitter S_0 of the single-frequency network calculated respectively in procedural stage (S70), is implemented at the observation times t_{Bj}.

10. (Previously Presented) A method for monitoring the stability of the carrier frequency according to claim 9, wherein said averaging all carrier-frequency displacements $\Delta\omega_{ij}$ of every transmitter S_i relative to the carrier frequency ω_0 of a reference transmitter S_0 of the single-frequency network calculated in procedural stage (S70), is implemented using a recursive method.

11. (Currently Amended) A device for monitoring the stability of the carrier frequency (ω_i) of identical transmitted signals $s_i(t)$ of several transmitters $(S_1,\ldots,S_i,\ldots,S_n)$ of a single-frequency network comprising:

a receiver device,

a unit for determining a transmission function $H_{SFN}(f)$ of a transmission channel of several transmitters $(S_1,\ldots,S_i,\ldots,S_n)$ of the single-frequency network to the receiver device disposed within the transmission range of the single-frequency network,

a unit for implementing an inverse Fourier transform,

a unit for masking an impulse response $(h_{SFNi}(t))$ for every transmitter (S_i) from the summated impulse response $(h_{SFN}(t))$,

a unit for determining the phase characteristic $(\arg(h_{SFNi}(t)))$ of the impulse response $(h_{SFNi}(t))$ for every transmitter (S_i),

a unit for calculating the phase-displacement difference $(\Delta\Delta\Theta_i(t_{B(j+1)}-t_{Bj}))$ of the phase displacement $(\Delta\Theta_i)$ of a transmitter (S_i) relative to a reference transmitter (S_0) at least at two different times $((t_{B1,}-t_{Bj+1}))$ and the carrier-frequency displacement $(\Delta\omega_i)$ of every transmitter (S_i) relative to the carrier frequency (ω_0) of the reference transmitter (S_0), and

a unit for presenting the calculated carrier-frequency displacement $(\Delta\omega_i)$ of every transmitter (S_i) relative to the carrier frequency (ω_0) of the reference transmitter (S_0) of the single-frequency network<u>, wherein the unit for presenting comprises a tabular and/or graphic display device</u>.

12. (Previously Presented) A device for monitoring the stability of the carrier wave (ω_i) of identical transmitted signals $s_i(t)$ of several transmitters $(S_1,\ldots,S_i,\ldots,S_n)$ of a single-frequency network comprising:

a receiver device,

a unit for determining a transmission function ($H_{SFN}(f)$) from pilot carriers of the received signal ($e_i(t)$),

a unit for masking an impulse response ($h_{SFNi}(t)$) for every transmitter (S_i) from the summated impulse response ($h_{SFN}(t)$),

a unit for determining the phase characteristic ($\arg(h_{SFNi}(t)$) of the impulse response ($h_{SFNi}(t)$) for every transmitter (S_i),

a unit for calculating the phase-displacement difference ($\Delta\Delta\Theta_i(t_{B(j+1)}-t_{Bj})$) of the phase displacement $\Delta\Theta_i$ of a transmitter (S_i) relative to a reference transmitter (S_0) at least at two different times ($t_{Bj}-t_{B(j+1)}$) and the carrier-frequency displacement ($\Delta\omega_i$) of every transmitter relative to the carrier frequency (ω_0) of the reference transmitter (S_0), and

a unit for presenting the calculated carrier-frequency displacement ($\Delta\omega_i$) of every transmitter (S_i) relative to the carrier frequency (ω_0) of the reference transmitter (S_0) of the single-frequency network.

13. (Canceled)